

THE GENUS *CHIONANTHOBIUS* PIERCE (COLEOPTERA:
CURCULIONIDAE): DESCRIPTIONS OF A NEW SPECIES ON
FORESTIERA (OLEACEAE) AND OF THE LARVA
AND PUPA OF *C. SCHWARZI* PIERCE

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Abstract.—The heretofore monotypic genus *Chionanthobius* Pierce, and adults, larvae, and pupae of the type-species, *C. schwarzi* Pierce, are re-described, and adults of a new species, *C. autumnalis* Clark, collected in Brazos County, Texas, on *Forestiera ligustrina* (Michx.) Poir. (Oleaceae), are described. Information on the life history of *C. schwarzi*, whose larvae develop in seeds of *Chionanthus virginicus* L. and *Osmanthus americanus* (L.) (both Oleaceae), is summarized from literature and collection data. Larvae of *C. autumnalis* are thought to develop in seeds of *F. ligustrina*.

The tribe Lignyodini was delimited and characterized, and its relationship to other taxa of Tychiinae was discussed by Clark et al. (1977). Since then, the senior author has continued revisionary studies on the lignyodines (*Chionanthobius* Pierce, *Hamaba* Casey, *Lignyodes* Dejean, *Neotylopterus* Hustache, *Plocetes* LeConte, and *Rosella* Whitehead). The discovery of a new species of *Chionanthobius* in Texas prompted the investigations reported here.

The heretofore monotypic genus *Chionanthobius*, along with the adult stage of the type-species, *C. schwarzi* Pierce, are re-described and illustrated. The new species is described and illustrated and compared to *C. schwarzi*. Larvae and pupae of *C. schwarzi* from the collections of the U.S. National Museum of Natural History, Washington, D.C. (USNM) are also described and illustrated for the first time. A manuscript description and illustrations prepared by William H. Anderson form the basis for the description of the larva of *C. schwarzi*.

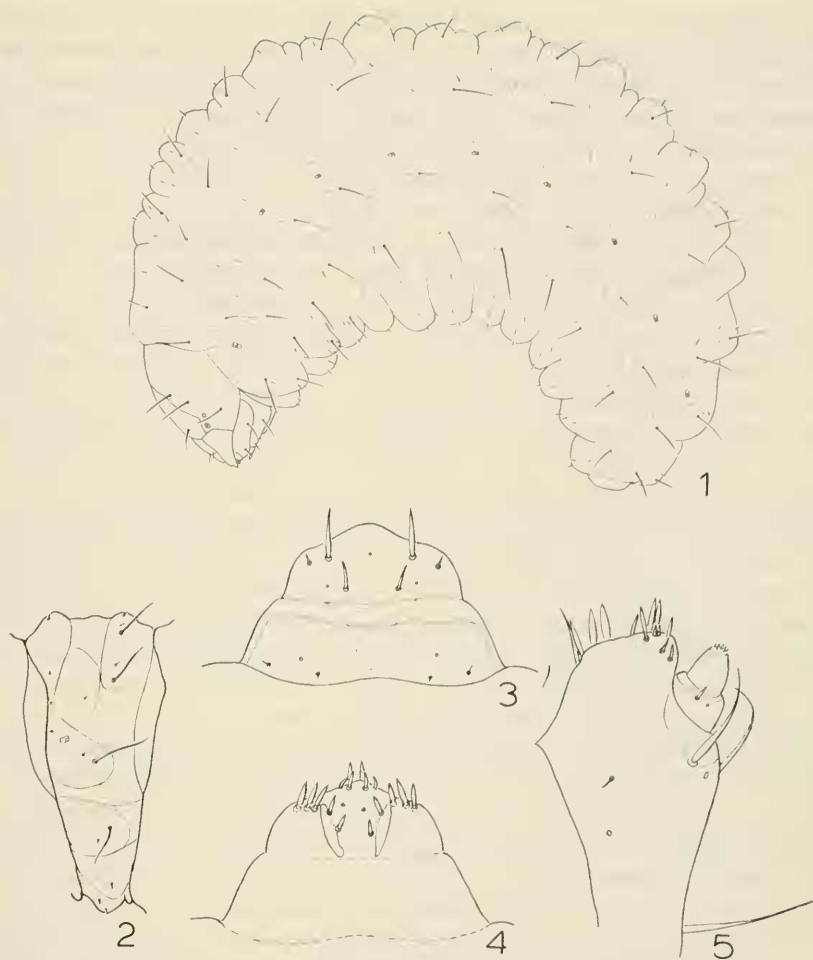
Chionanthobius Pierce

Chionanthobius Pierce, 1912: 168. Type-species, by original designation and by monotypy, *Chionanthobius schwarzi* Pierce. Blatchley and Leng, 1916: 243–244; Kissinger, 1962: 9, 1964: 53, 54; Clark et al., 1977: Figs. 4, 11, 17, 24, 52.

Description of adult.—*Head*: Densely punctate; vertex with elongate, narrow, fulvoferruginous scales, gena and venter with broader, white scales; frons narrower than rostrum at base, eyes separated by distance less than 20% of eye width. *Antenna*: Funiculus with 7 articles. *Pronotum*: Densely punctate on disc; scales recumbent, their apices directed toward midline. *Elytra*: humeri slightly prominent, sides broadly, evenly curved in apical $\frac{1}{2}$; apices of interspaces 4–6 raised to form posterior tubercles; interspaces uniformly, moderately deeply punctate; striae shallow, discretely punctate; interspaces with narrow, elongate, apically subtruncate scales. *Pygidium*: In male, moderately large, broadly exposed, the exposed portion convex, vertical; in female, much smaller, much less broadly exposed, the exposed portion flat, oblique. *Abdomen*: Sides of sterna 1–3 with dense, broad, white to pale fulvous scales, broad scales replaced toward midline by progressively narrower scales; sterna 4 and 5 with fine, setalike fulvoferruginous scales only; sternum 5 with small lateromedian tufts of suberect setae. *Legs*: Vestiture of tibiae recumbent, fine, setalike.

The description of the adult is a composite of features shared by *C. schwarzi* and a new species described below.

Description of mature larva (Figs. 1–5).—Terminology used to describe setae and other structures is that proposed by Anderson (1947). *Body*: Cream white, robust, moderately curved, thickest through middle abdominal segments (Fig. 1). *Length*: 5.70–7.20 mm ($n = 10$). Dorsum of pronotum slightly sclerotized, lightly pigmented. Asperities inconspicuous. *Head*: Light orange brown, lightly mottled with pale areas dorsally; free, as broad as long, broadest at middle, truncate posteriorly. *Width*: 0.92–1.06 mm ($n = 18$). Anterior ocelli present, posterior ocelli absent. Antenna consisting of 1 membranous article which bears a subconical sensory appendage and 6 minute projections, of which 1 is short and blunt. Epicranial suture approximately $\frac{1}{2}$ as long as head. Frontal sutures distinct, nearly straight posteriorly, incomplete anteriorly. Endocarina distinct, approximately $\frac{2}{3}$ as long as frons. Four pairs of frontal setae present, of which 2, 3, and 5 are minute, 4 long. Two pairs of frontal sensilla present. Dorsal epicranial setae 1 and 4 minute, 2 slightly longer, 3 and 5 long, subequal. Four minute posterior epicranial setae present. Lateral epicranial seta 1 very short, 2 moderately long. Ventral epicranial setae very short, subequal. Clypeus (Fig. 3) distinctly transverse, with 2 minute setae and 1 sensillum on each side near base. Labrum (Fig. 3) with anterior margin produced near middle. Labral



Figs. 1-5. *Chionanthobius schwarzi*, larva. 1, Full-grown larva, lateral view. 2, 1st abdominal segment, lateral view. 3, Clypeus and labrum. 4, Epipharynx. 5, Right maxilla, ventral view.

setae 1 and 2 short to moderately long, subequal, and much longer than 3. Paired lateral and median sensilla present on labrum, median sensilla distinctly anterior. Labral rods short, moderately stout, slightly convergent posteriorly. Epipharynx (Fig. 4) with 3 anterolateral, 6 anteromedian, and 4 median setae. Median setae subequal in length, as long as anteromedian setae. Epipharyngeal sensory pores in 2 clusters of 3, between or slightly in front of anterior pair of median setae. Epipharynx without asperities. Mandible with 2 apical teeth and 2 minute setae, of which 1 is positioned

directly behind 2. Seta on basal article of maxillary palpus very short. Maxillary mala (Fig. 5) with 7 dorsal and 5 ventral setae. Labial palpi with 2 articles. Setae of ligula minute. Premental sclerite with distinct anterior and posterior median extensions. Postmental setae 1 and 3 short, subequal, 2nd $3\times$ as long as 1st; posterior pair separated by only slightly greater distance than anterior pairs. *Thorax*: Pronotum with 10 or 11 dorsal setae, of which 4 are moderately long, the others short to minute. Pleurum of all segments with 2 setae, 1 long, the other short. Epipleurum of meso- and metathorax with 1 long seta. Spiracle bicameral. Spiracular area of mesothorax with 1 minute and 1 very short seta. Postdorsum of meso- and metathorax with 4 setae of which 1 and 3 are very short, 2 and 4 long, subequal. Alar areas with 1 short seta. Pedal lobes with 7 setae of which 1 is long, the remainder short, the ventral most of them subequal to sternal setae. Sternal setae short, subequal to eusternal setae of abdomen. *Abdomen*: Segments I–VIII (Figs. 1, 2) with lateral spiracles which are bicameral, with air tubes subequal to or slightly shorter than diameter of peritreme. Segments I–VII with 3 dorsal folds. Dorsal fold I developed laterally on most segments. Prodorsal setae present on segments I–VII, absent on VIII and IX. Five postdorsal setae present on segments I–VII, 1, 2, and 4 very short, 3 and 5 long; segment VIII with 3 setae, 2 minute, 1 long; segment IX with 2 setae, 1 minute, 1 long. Pleura with 1 short and 1 long seta. Pedal areas with 1 very short seta. Eusterna with 2 very short setae. Anus terminal, surrounded by 4 lobes, each lateral lobe bearing 3 minute setae.

The description of the larva is based on examination of 18 specimens of *C. schwarzi* (USNM) from Plummers Island, Maryland (August 26, 1907, seeds *Chionanthus virginicus* L., J. A. Hyslop, and from the same locality and host, August, 1912, E. A. Schwarz and H. S. Barber), and from Greensboro, Florida (January 10, 1942, *Osmanthus americanus* (L.) seed).

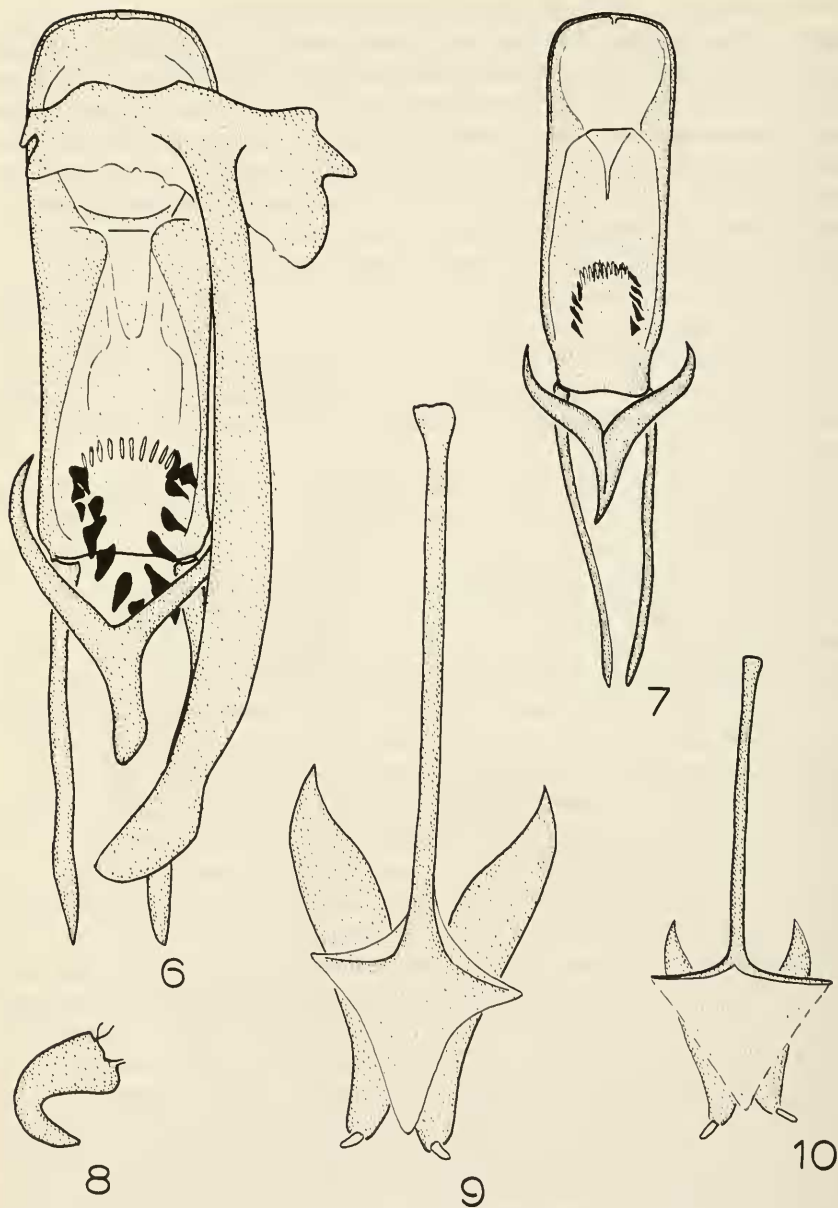
Description of pupa.—Terminology used to describe setae and other structures is that proposed by Burke (1968). *Body*: stout, clothed with dark, attenuate setae, all borne on summits of subconical, large-to-small-sized tubercles. Length (of 2 pupae), 5.2–5.3 mm. *Head and rostrum*: One pair of moderately long frontal setae borne on small tubercles present, with a pair of small, rounded tubercles without setae between them. One pair of supraorbital setae present, subequal in length to frontal setae. One pair of interocular setae present, subequal in length to frontal and supraorbital setae, but borne on longer tubercles and separated by a slightly greater distance than the frontal setae. Basirostral setae absent. One pair of moderately long distorostral setae present, borne on short tubercles. Rostrum elongate, extending posteriorly to apices of tibiae of folded mesothoracic legs. Prothorax rounded at sides, slightly broader than long, with moderately long setae. One pair of anteromedian setae, 1 pair of median setae, and 1 pair of posteromedian setae present, borne on medium-sized tubercles. Four pairs

of posterolateral setae present, all borne on large tubercles, the 4th pair dorsal to the 3rd pair. *Mesothorax*: With 1 pair of anteronotal setae, and 1 pair of mesonotal setae, all moderately long and borne on moderately large tubercles. *Metathorax*: With no anteronotal setae; 2 pairs of moderately long metanotal setae present, borne on moderately large tubercles. *Abdomen*: Segments 1–7 with 2 pairs of moderately long discotergal setae, segment 8 with 1 pair of discotergal setae, all borne on moderately large tubercles. No anterotergal setae present on any segments. Segments 1–7 with 2 pairs of laterotergal setae, of which seta 1 is very tiny, 2 is longer than 1, but shorter than discotergal setae. Ninth segment bearing a pair of widely separated, long, curved, attenuate posterior processes, each with a terminal seta, and 1 lateroventral seta on a moderately long tubercle. Sterna devoid of setae, except for 1 pair of laterosternal setae on segment 8. *Femora*: Each bearing 1 apical seta and 1 preapical seta on moderately large tubercles.

Two pupae of *C. schwarzi* (USNM), both in alcohol, from Plummers Island, Maryland (June 7, 1913, Schwarz, Barber, and Pierce, "from Soil"), identified by association with larvae of *C. schwarzi*, were examined.

Remarks.—The combination of characters presented by Clark et al. (1977) to distinguish *Chionanthobius* from the other lignyodine genera was: Rostrum long, finely sculptured, strongly sexually dimorphic; scrobe longitudinal; subapical elytral tubercles prominent; sternum 5 shorter than sterna 3 and 4 combined; and scales on elytra uniformly recumbent. Only the last of these now appears to be unique to *Chionanthobius*. This is apparent after detailed examination of numerous species of Lignyodini in the course of ongoing revisionary studies. Kissinger (1964: 53) separated *Chionanthobius* from *Lignyodes* (his *Thysanocnemis*) by stating of the latter that the "suture between sterna 4 and 5 [is] not as apparent as [the] suture between sterna 3 and 4." This does not distinguish *Chionanthobius* from all other Lignyodini. The species of *Chionanthobius* are distinguished from known species of *Neotylopterus*, *Plocetes*, and *Rosella*, and from many, but not all species of *Lignyodes*, by having the median lobe of the male genitalia symmetrical rather than twisted (cf. Figs. 6 and 7 with Figs. in Clark et al., 1977, and Clark, 1980). Further evaluation of the characters of *Chionanthobius* and the other lignyodines will be made as revisionary studies proceed.

Among Lignyodini, only *Neotylopterus pallidus* (LeConte) was until now known from published descriptions of the larva and pupa (Clark, 1978). The larva of *C. schwarzi* is distinguished from that of *N. pallidus* in possessing four rather than three frontal setae (setae 2, 3, 4, and 5 are present), and in relative lengths of the five postdorsal setae on abdominal segments I–VII (Fig. 2), seta two being short in *Chionanthobius*, long in *Neotylopterus*, seta three being long in *Chionanthobius*, short in *Neotylopterus*. The pupa of *C. schwarzi* is similar to that of *N. pallidus*, but differs in having no



Figs. 6-10. *Chionanthobius* spp., male and female genitalia. 6, Median lobe, tegmen, and spiculum gastrale of male *C. schwarzi*. 7, Median lobe and tegmen of *C. autumnalis*. 8, Spermatheca of *C. schwarzi*. 9, Spiculum ventrale and ovipositor of female *C. schwarzi*. 10, Spiculum ventrale and ovipositor of *C. autumnalis*.

basirostral setae, unbranched preapical setae on the femora, two small tubercles between the frontal setae of the head, and laterosternal setae on the eighth abdominal segment.

Chionanthobius schwarzi Pierce

Figs. 6, 8, 9, 11

Chionanthobius schwarzi Pierce, 1912: 168. Holotype ♂: Plummers Island, Maryland (USNM, examined). Blatchley and Leng, 1916: 244; Greene, 1916: 143–144; Clark et al., 1977, Figs. 4, 11, 17, 24, 52.

Male holotype.—*Length*: 5.60 mm. *Width*: 2.88 mm. *Head*: Eyes separated by distance 19% of eye width. *Rostrum*: In profile, dorsal margin strongly curved in distal $\frac{1}{3}$, nearly straight proximally; in dorsal view, narrow at base, gradually widened from there to tip; dorsal and ventral margins of scrobe carinate; dorsolateral carinae distinct, bounded by moderately deep, rugosely punctate sulci which are distinct between antennal insertions and tip; dorsum with short, shallow sulcus over antennal insertions; glabrous except for small slender scales in basal $\frac{1}{4}$. *Prothorax*: Sides feebly convergent from base to apical $\frac{1}{3}$, strongly rounded from there to shallow subapical constriction; scales dense, short, narrow, striate, fulvo ferruginous. *Elytra*: Interspaces broad, flat, odd interspaces slightly more prominent than even ones; white scales forming incomplete anteromedian transverse band and irregular but more nearly complete posteromedian band which is interrupted by fulvo ferruginous scales on interspace 2; fuscous scales forming broad, nearly complete median band which is interrupted on interspaces 2 and 6 by fulvo ferruginous scales; interspaces 2 and 3 each with small subbasal patch of pale fuscous scales; fulvo ferruginous scales also covering apical $\frac{1}{4}$ of all but sutural interspaces, the latter with elongate subapical patch of fuscous scales and apical patch of white scales; striae scales not, or only slightly wider than scales on interspaces, mostly the color of scales on adjacent interspaces. *Legs*: Femora stout, each with small but distinct ventral tooth; with vestiture of fine, pale fulvous to ferruginous, acuminate, setalike, recumbent scales; metatibia mucronate, pro- and mesotibiae each with long, slender, curved apical uncus. *Genitalia*: As in Fig. 6, not of holotype.

Female exemplar.—*Length*: 5.52 mm. *Width*: 3.04 mm. Otherwise as described for male, except for longer, more slender, less deeply carinate and punctate rostrum (see Clark et al., 1977, Fig. 17), and smaller, less broadly exposed pygidium. *Genitalia*: As in Figs. 8, 9.

Variation.—The range of variation in size observed in the 101 adult specimens in the USNM collection is as follows: Length of males, 4.28–5.48 mm, width of males, 2.58–3.12 mm; length of females, 4.16–5.68 mm, width of females, 2.20–3.12 mm. There is also variation in distribution of variously

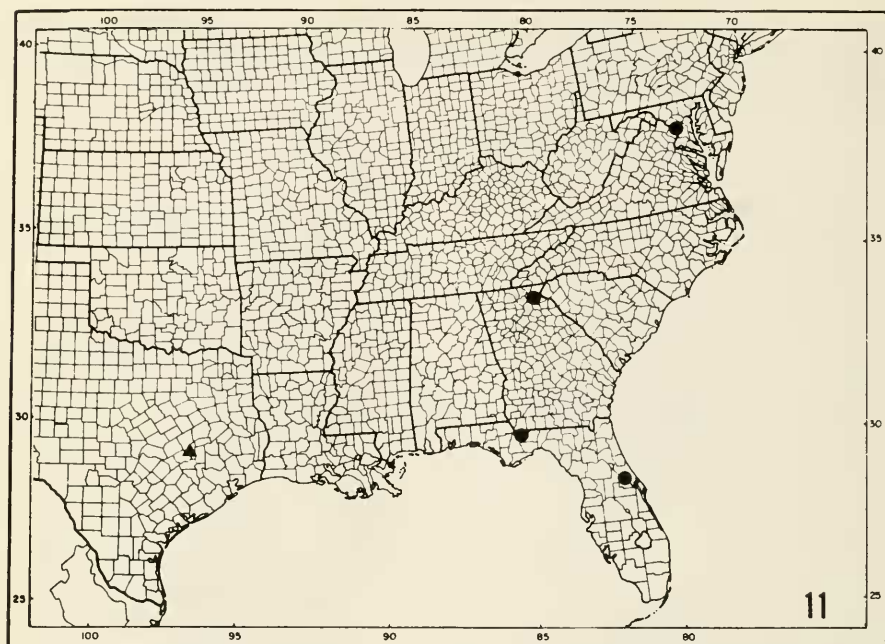
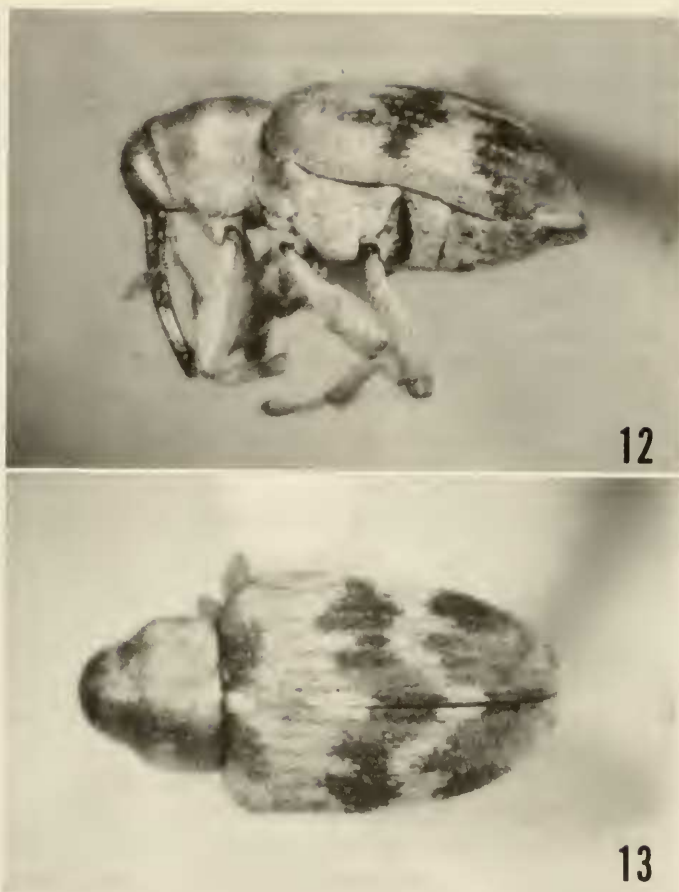


Fig. 11. Map of the southeastern United States showing distribution of *Chionanthobius schwarzi* (circles) and *C. autumnalis* (triangles).

colored scales on the elytra. The transverse bands of white scales are interrupted in some specimens on interspaces other than the second, and white scales are more or less sparsely intermixed with fulvoferruginous scales on the bands in some. Variation in distribution of fuscous scales is roughly the same, fulvoferruginous scales being intermixed more or less densely on the transverse bands in some. A distinct posteromedian vitta of fuscous scales on the sutural interspaces is a constant feature, however. The midline of the pronotum is feebly carinate in large individuals.

Distribution (Fig. 11).—All but 7 of the adult specimens examined are from the type-locality, Plummers Island, Maryland. Four of the other specimens are from Great Falls, 2 from Cropley, Maryland, and 1 from Demorest, Georgia. Greene (1916) reported the species from Enterprise, Florida, but no specimens are on hand to verify this record. Some of the larvae described above were collected at Greensboro, Florida, the others are from the type-locality.

Life history.—Label data on the adult specimens examined indicate that the weevils were active between mid-June and mid-August between 1905–1933 in Maryland. The Georgia adult was collected on 15 May 1939, the Florida specimens reportedly on 10 July 1915 (Greene, 1916). Larvae were



Figs. 12-13. *Chionanthobius autumnalis*, female allotype. 12, Lateral view. 13, Dorsal view.

taken during August of 1907 and 1912 in Maryland, on January 20, 1942, in Florida. Mating occurs as early as July 3-12, as indicated by two pairs of specimens in the collection taken on those dates, mounted one pair to each of two pins, each with the label "in copula."

In reference to *C. schwarzi*, Pierce (1912: 168) stated that "according to Mr. Schwarz, the weevils breed in the berries of the fringe tree (*Chionanthus virginica* [sic]) and the larvae develop in the seeds of the same tree." A vial containing weevil larvae attached to a pin in the unit tray containing the pinned adult specimens is accompanied by the label "*Chionanthobius schwarzi* larvae dead in sand beneath berries from which they issued.—Plummers Isl. Md note no. 122c Preserved Sept. 29, 1912—Schwarz &

Barber." From this it is evident that larvae of *C. schwarzi*, like those of *Neotylopterus pallidus*, emerge from the seeds and enter the ground to complete their development (see Clark, 1978).

Some of the larvae examined were taken from seeds of *Osmanthus americanus* (L.) (Oleaceae).

Chionanthobius autumnalis Clark, NEW SPECIES

Figs. 7, 10, 11-13

Type-material.—*Holotype*: ♂, labelled "Texas, Brazos Co. College Station 31 Oct. '72 W. E. Clark" "taken on *Forestiera ligustrina*" (USNM type no. 76746). *Allotype*: ♀, with same label data as the holotype (USNM). *Paratypes*: With same label data as the holotype (7 ♂, 23 ♀); same, except 3 Oct. '72 (3 ♂, 6 ♀); same, except 10 Oct. '72 (2 ♂); same, except 7-XI-72 (3 ♂, 18 ♀); same, except 14-XI-72 (5 ♀); same, except 2-XII-72 (2 ♂, 12 ♀); total paratypes, 81, (in Auburn University, C. W. O'Brien, Texas A&M University, and USNM collections).

Male holotype.—*Length*: 3.28 mm. *Width*: 1.64 mm. *Head*: Eyes separated by distance 17% of eye width. *Rostrum*: Slender; in profile, dorsal margin nearly evenly curved from base to apex; in dorsal view, narrow at base, widened slightly from base to antennal insertions, slightly, abruptly expanded at insertions, and expanded again slightly at tip; scrobal margins not carinate; dorsolateral carinae obsolete, sulci represented by rows of elongate, irregular punctures, these very shallow distad of antennal insertions; dorsum with moderately long, deep median sulcus over antennal insertions; vestiture consists of a few slender scales on dorsolateral portion near extreme base, and sparse, short, fine setae which arise from punctures in sulci in basal ½. *Prothorax*: Sides subparallel in basal ¼, strongly rounded anteriorly to distinct subapical constriction; with dense, elongate, fulvo ferruginous scales, and broad, white scales in dorsomedian vitta and dorsal lateromedian fasciae. *Elytra*: Interspaces moderately broad, mostly flattened; odd interspaces not more prominent than even ones, except where median portions of sutural, 3rd, and 5th interspaces are feebly raised; white scales form irregular but complete anteromedian and posteromedian transverse bands; fuscous scales form an irregular transverse band between white bands, and an incomplete band posterior to posteromedian white band; median fuscous band interrupted by elongate patch of fulvo ferruginous scales on interspace 2; fulvo ferruginous scales predominant basally and on apical ¼, except for subapical sutural vitta of fuscous scales; feebly raised white scales sparse on interspaces 5-6; striae scales distinctly wider than scales on interspaces, mostly fulvo ferruginous, forming more or less distinct vittae. *Legs*: femora stout, unarmed; with vestiture of narrow, white to fulvous, acuminate, recumbent scales; metatibia with long, slender, straight, acute,

Table 1. Characters distinguishing *Chionanthobius autumnalis* from *C. schwarzi*.

<i>C. autumnalis</i>	<i>C. schwarzi</i>
Pronotum with dorsomedian vitta and dorsal lateromedian, and in some specimens dorsal posterolateral fascia of white scales.	Pronotum with fulvoferruginous scales only.
White scales on elytra dense, anteromedian transverse fascia extending across entire width in most specimens, posterior band complete.	White scales on elytra less dense, anteromedian transverse band not distinct across entire width in most specimens, posteromedian band broken on interspace 2, greatly narrowed or interrupted on interspace 4.
Strial scales distinctly broader than scales on interspaces, fulvous, contrasting with white or fuscous scales on adjacent interspaces.	Strial scales not or very slightly broader than scales on interspaces, their color matching that of scales on adjacent interspaces.
Interspaces 2 and 3 without subbasal patch of fuscous scales.	Interspaces 2 and 3 each bearing small subbasal patch of fuscous scales.
Dorsal and ventral scrobal margins ecarinate; dorsolateral portion of rostrum at most shallowly punctate in male and in female above antennal insertions.	Dorsal and ventral scrobal margins distinctly carinate, especially in males; dorsolateral portions of rostrum of males deeply rugose above antennal insertion.
Femora not toothed beneath.	Femora toothed beneath.

apical mucro; pro- and mesotibiae each with moderately long, slender, acute, apical uncus. *Genitalia*: As in Fig. 7; paratype.

Female allotype (Figs. 12, 13).—*Length*: 3.76 mm. *Width*: 1.82 mm. Otherwise as described for male, except for longer, more slender, less deeply carinate and punctate rostrum, and smaller, less broadly exposed pygidium. *Genitalia*: As in Fig. 10; paratype.

Variation.—The range in size observed in the 81 specimens of the type-series is as follows: Length of males, 2.76–3.56 mm, width of males, 1.34–1.70 mm; length of females, 2.72–4.00 mm, width of females, 1.32–2.04 mm. Although there is slight variation in the width of the transverse bands of white and fuscous scales on the elytra, there is no notable tendency for the fulvoferruginous scales to be intermixed among the scales on these bands as in *C. schwarzi*.

Distribution (Fig. 11).—Known only from the type-locality.

Life history.—Adults of *C. autumnalis* were collected over a period extending from 3 October to 2 December 1972. All were on the pistillate individuals of a dioecious shrub, *Forestiera ligustrina* (Michx.) Poir. (Oleaceae). On each of the collection dates, they were present along with adults

of *Neotylopterus ligustricolus* Clark (see Clark, 1980). Both species were present in roughly equivalent numbers on each date. Adults of the latter species were reared from larvae which emerged from fruit collected from the plants, but *C. autumnalis* individuals were not among the numerous specimens reared. The two weevil species closely resemble each other, and the fact that both were present was not recognized at the time the adults and larvae were being collected. It cannot now be ascertained, therefore, whether the observations made on adult feeding, mating, and oviposition were of both species, or of *N. ligustricolus* alone.

Remarks.—In addition to the characters listed in Table 1, *C. autumnalis* differs from *C. schwarzi* in its obviously smaller size, generally stouter, less setalike scales, especially those on the venter and legs, and in the more convex elytra and generally stouter body form. There are only minor differences in the male and female external genitalia of the two species (cf. Figs. 6–10).

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